



**UNIVERSITI TEKNOLOGI MARA
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MEC 299

CHEMICAL SPRAY TROLLEY

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ABSTRACT

Farmers in the agricultural industry frequently spray crops with a backpack-mounted sprayer. These problems can be solved by using a chemical spray trolley, which is time-consuming, expensive, and a substantial source of human fatigue. It promotes even chemical distribution, can project chemicals at the desired level, has a precision-made nozzle tip for an adjustable stream, and can project fogging spray as needed. The pump in our innovation is powered by a slider crank mechanism, which converts rotary motion into reciprocating motion, dispersing the pesticide through the nozzle. A unique arrangement is employed in this project to change the pressure from high to low.

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1.0 INTRODUCTION

Agriculture is one of the major sectors of the economy. Over the years it has developed and the use of the new technologies and equipment replaced almost all the traditional methods of farming. Besides, there are still some small farmers that use the old traditional methods of agricultures because they lack of resources to use modern methods. With consideration to these issues, an attempt is made to build spraying equipment that would be useful to farmers. This equipment is simple to use and maintain. It employs a reciprocating pump to generate the necessary pressure for the spraying motion. This multifunction gadget will be useful since it may be used in various spraying stages of farming depending on the process requirements. The operating mechanism is as follows, when the piston reciprocates up and down, fluid enters the piston owing to suction, a non-return valve allows the fluid to enter in one direction and locks the fluid within, when the piston reciprocates down, fluid sprays from the top.

1.1 OVERVIEW OF PRODUCT

Over the recent years, the farming industry has been improved especially in the development of machinery such as tractors in the early days and now the use of a drone to replace man power in terms of efficiency and rate of work. Due to the fast revolution machinery, small farmers have also come up with inventions to increase their work rate especially in production and time managed.

A sprayer is a piece of equipment that is used to apply herbicides, pesticides and fertilizers to agricultural crops. Sprayers are commonly used for the projection of water, weed killers, crop performance materials, pest maintenance chemicals, as well as manufacturing and production line ingredients. The main objective of this product is to produce a chemical spray that is easy to use and improve its design and weaknesses. The chemical spray has been enhanced in various aspects, such as adding an adjustable handle so the handle can be adjusted either height or low. Then, the chemical tank and nozzle changed to other materials to last longer. The wheel also changed to the rubber wheel with a lock because it is durable and safer. This example above demonstrates how this project improved an existing product on the market. The materials used to construct the chemical spray are also durable and reasonably priced

Ideas and design specifications will be combined to create a product model. The product model will be shown using a 3D simulation, SolidWorks software. The product will also consider the pros and cons that users/customers will get in the future so that the project can make the best outcome.